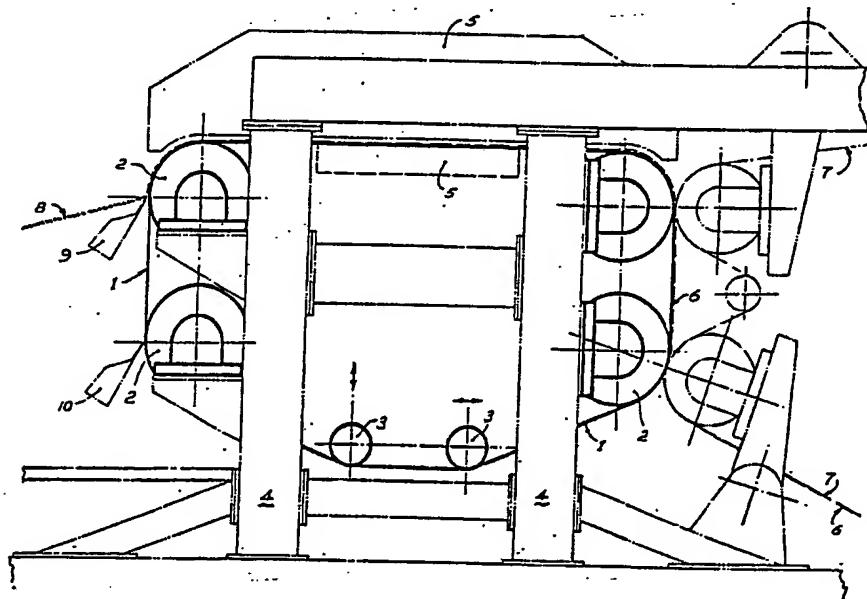




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(54) Title: **ECONO WEB DRYER STATION**

(57) Abstract

Apparatus for drying paper or other types of web material, especially in tissue or crepe paper manufacture, wherein wet web material (6) is transferred from a felt conveyor (7) onto an endless flexible metal band and passed through a heating zone where the web material is dried, after which the dried web material is removed from the metal band by means of a doctor blade (9).

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ECONO WEB DRYER STATIONTECHNICAL FIELD

The present invention relates to an alternative and improved method of, and apparatus for, drying paper or other
5 types of webs.

BACKGROUND ART

According to a known paper web manufacturing process a sheet of paper substrate or web is formed on an endless wire and is transferred to a felt section through a pick up having
10 a number of press rollers which transfer the webbed sheet of paper (or web) onto a large rotating heated drum for drying of the web. When the web has been dried it is removed from the drum by means of a doctor blade.

The drying drums, normally steam heated, are about
15 4.5-5.0 metres in diameter and rotate at a speed of from about 1000 to about 3000 metres/minutes. However the costs of installation, operation and maintenance of such known apparatus is very high, and the time required for repair to or resurfacing of the cylinder may mean that the apparatus is
20 inoperative for a period of 5-10 days.

DISCLOSURE OF THE INVENTION

It is an object of this invention to provide web drying apparatus for the drying of webs of paper or other materials which is more efficient and less expensive to install and to
25 maintain than known drum rollers.

According to one aspect of the present invention there is provided a web drying apparatus comprising an endless metal band or conveyor having a smooth outer surface and being of predetermined length and width, rollers adapted to
30 guide said metal band through a circuitous path, means to drive said metal band through a circuitous path, and heating means adapted to heat and dry web material on said metal band.

BEST MODE OF CARRYING OUT THE INVENTION

According to the invention there is provided web drying
35 apparatus comprising a thin gauge (about 0.8-1mm) endless



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metal band, having the width of the required drying face for the web and a length determined by the drying capacity required and its arrangement over the guiding and driving rollers.

5 The advantages which such an endless band web drying apparatus has over known apparatus comprising steam heated cylinders include:-

- elimination of the need for expensive steam generating equipment, i.e., boilers and their associated
10 auxiliaries, and the manning and maintenance of such plants.
- elimination of the need for expensive creping or M.G. cylinders.
- lower initial capital cost of paper manufacturing
15 machines.
- elimination of the need for regular plant shutdowns to regrind the surfaces of drying cylinders.
- more efficient running costs and thus lower operating costs.
- 20 - machine warm up time greatly reduced.
- improved drying of the web by more accurate control of the drying surface temperature.
- simplification of the hot air hood design and/or arrangement.
- 25 - improved creping process because of the more precise control of the camber at the creping doctors.
- more accurate and controlled nip impressions from the use of press rollers.

BRIEF DESCRIPTION OF THE DRAWINGS

30 An embodiment of the invention will be described with reference to the drawing, Fig. 1 which represents a side elevation view of web drying apparatus according to the invention.

35 In the embodiment shown, an endless metal band 1 is adapted to follow a circuitous path around drive and guide



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rolls 2 and tension and tracking rolls 3. The number of rolls required may vary from one embodiment to another. The rolls are mounted on or connected to the frame of the apparatus 4.

5 The metal band 1, and any web material being transported by said band is adapted to pass through a heating zone 5 where it is heated by any suitable means, such as direct electrical resistance, electric induction or the like, said heating means comprising suitable temperature control means.

10 In operation the wet web 6 is transferred from a felt conveyor 7 via press rollers onto the metal band 1 where it is conveyed through heating and drying zone 5 and upon exit therefrom the dried material 8 is removed from the metal band 1 by a creping doctor blade 9, which alternates in operation
15 with doctor blade 10.

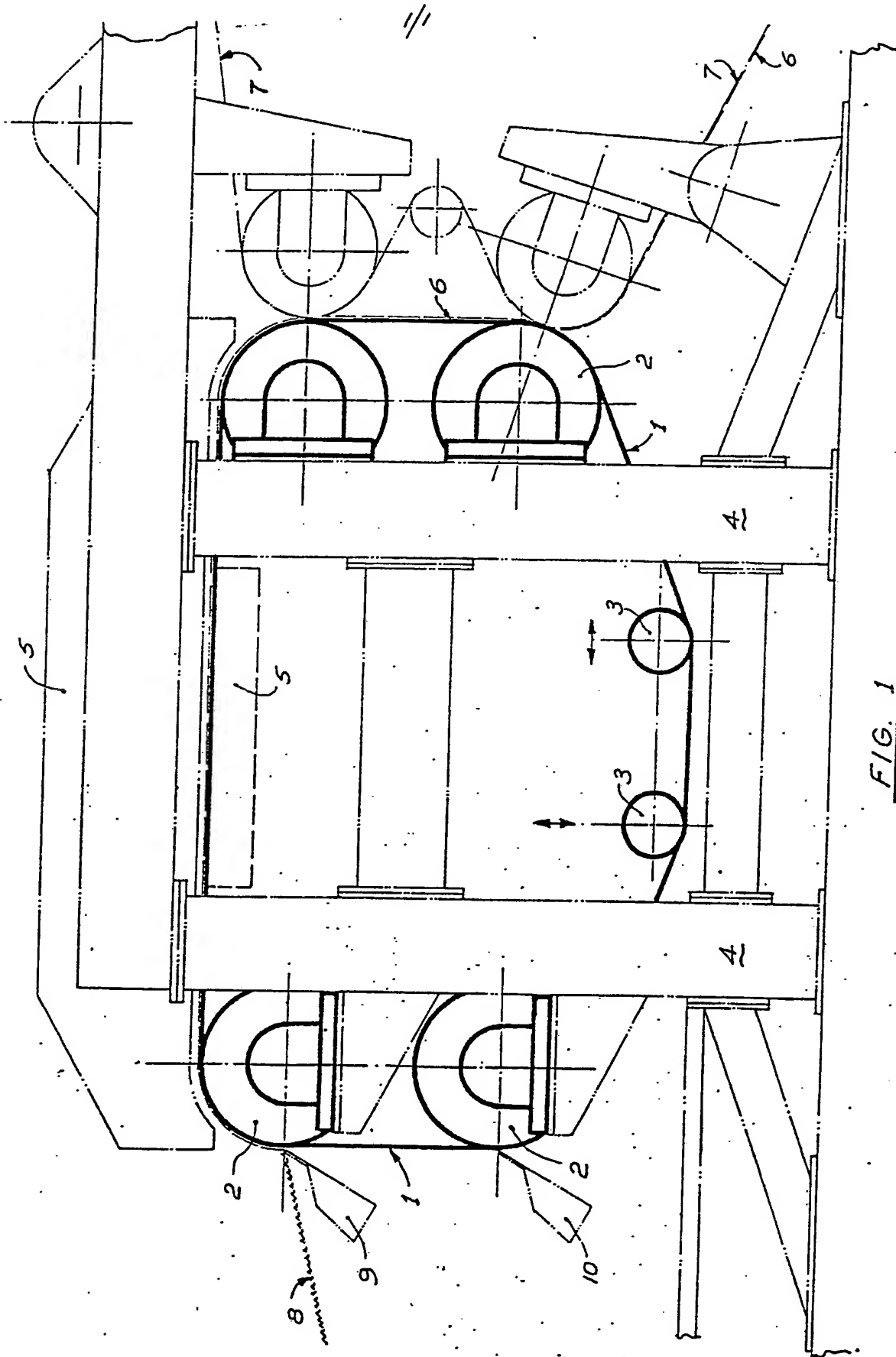
Although the invention has been described above with reference to preferred embodiments it will be appreciated that numerous alternatives, within the scope of the invention, may be substituted for specifically described
20 features.



The claims defining the invention are as follows:-

1. Web drying apparatus comprising an endless flexible metal band having a smooth outer surface and being of predetermined length and width, rollers adapted to guide said metal band through a circuitous path, means to drive said metal band through a circuitous path, and heating means adapted to heat and dry web material on said metal band.
2. Web drying apparatus according to claim 1, wherein web material is adapted to be transferred to said metal band from felt conveyor means adapted to pass in close proximity to an outer surface region of said metal band.
3. Web drying apparatus according to claim 2, wherein one or more of the rollers guiding said metal band are adapted to cooperate with one or more rollers forming part of said felt conveyor means, said rollers co-operating to provide press roller means to assist the transfer of web material from said felt conveyor means to said metal band.
4. Web drying apparatus according to any preceding claim, wherein doctor blade means are provided to remove the web material from said metal band.
5. Web drying apparatus according to any preceding claim wherein the heating means comprises electrical resistance or electric induction heating means.
6. Web drying apparatus according to any preceding claim, substantially as hereinbefore described.
7. Web drying apparatus according to any preceding claim, substantially as hereinbefore described with reference to the drawing.





REPLACEMENT SHEET



INTERNATIONAL SEARCH REPORT

International Application No PCT/AU83/00123

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC Int. Cl. ³ D21F 5/00, F26 B 13/02, 13/10		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
IPC	D21F 5/00	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁴		
AU: IPC as above		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category ⁵	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	CH, A, 581748 (ESCHER WYSS GmbH) 15 November 1976 (15.11.76)	
X	DE, A, 2533534 (BUTTNER-SCHILDE-HAAS A.G.) 27 January 1977 (27.01.77)	
X	DE, A, 3036669 (BABCOCK TEXTILMASCHINEN K.G. GMBH & CO.) 13 May 1982 (13.05.82)	
Y	US, A, 4112586 (LEHTINEN) 12 September 1978 (12.09.78)	
Y	US, A, 4288212 (VERTEGAAL) 8 September 1981 (08.09.81)	
X	US, A, 3367035 (TOMLINSON) 6 February 1968 (06.02.68)	
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IV. CERTIFICATION		
Date of the Actual Completion of the International Search ²	Date of Mailing of this International Search Report ²	
2 November 1983 (02.11.83)	14th November 1983 (4-11-83)	
International Searching Authority ¹	Signature of Authorized Officer ¹⁰	
Australian Patent Office	A.S. Moore <i>A.A. Moore</i>	